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TO: Examiner Sameh Tawfik, Art Unit 3721 - United States Patent and Trademark Office

Fax No. 571-273-8300

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FROM: Diane Robinson (Typed or printed name of person signing Certificate)

Fax No. 513-634-6108

Phone No. 513-634-2477

Application No.: 09/905,274

Inventor(s): Clifford T. Papsdorf, et al.

Filed: July 13, 2001


Docket No.: 8609

Confirmation No.: 2737

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- 1) Appeal Brief (15 pages)
- 2) Fee Transmittal (1 page)

Number of Pages Including this Page: 17

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PTO/SB/17 (1-06)

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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FEE TRANSMITTAL for FY 2006 Patent fees are subject to annual revision. Effective December 8, 2004	Complete if Known	
	Application Number	09/905,274
	Confirmation Number	2737
	Filing Date	July 13, 2001
	First Named Inventor	Clifford T. Papsdorf
	Examiner Name	Sameh Tawfik
	Art Unit	3721
TOTAL AMOUNT OF PAYMENT (\$)	Docket No.	8609

METHOD OF PAYMENT 1. <input checked="" type="checkbox"/> The Director is hereby authorized to charge indicated fees submitted on this form, credit any over payments, and charge any additional fee(s) during the pendency of this application to: Deposit Account Number: 16-2480 Deposit Account Name: The Procter & Gamble Company	FEE CALCULATION (continued) 5. ADDITIONAL FEES <table border="1"> <thead> <tr> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr> <td>Extension for reply within 1st month</td> <td>(\$120) <input type="checkbox"/></td> </tr> <tr> <td>Extension for reply within 2nd month</td> <td>(\$450) <input type="checkbox"/></td> </tr> <tr> <td>Extension for reply within 3rd month</td> <td>(\$1,020) <input type="checkbox"/></td> </tr> <tr> <td>Extension for reply within 4th month</td> <td>(\$1,590) <input type="checkbox"/></td> </tr> <tr> <td>Extension for reply within 5th month</td> <td>(\$2,160) <input type="checkbox"/></td> </tr> <tr> <td>Information Disclosure Statement fee</td> <td>(\$180) <input type="checkbox"/></td> </tr> <tr> <td>37 CFR 1.16(f) Late Oath/Declaration (nonprovisional)</td> <td>(\$130) <input type="checkbox"/></td> </tr> <tr> <td>37 CFR 1.17 (q) Surcharge - Late provisional filing fee or cover sheet</td> <td>(\$50) <input type="checkbox"/></td> </tr> <tr> <td>Non-English specification</td> <td>(\$130) <input type="checkbox"/></td> </tr> <tr> <td>Notice of Appeal</td> <td>(\$500) <input type="checkbox"/></td> </tr> <tr> <td>Filing a brief in support of an appeal</td> <td>(\$500) <input checked="" type="checkbox"/></td> </tr> <tr> <td>Request for oral hearing</td> <td>(\$1,000) <input type="checkbox"/></td> </tr> <tr> <td>Acceptance of unintentionally delayed claim for priority under 35 U.S.C. 119, 120, 121, or 365 (a) or (c)</td> <td>(\$1,370) <input type="checkbox"/></td> </tr> <tr> <td>Other:</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Fee Description	Fee Paid	Extension for reply within 1 st month	(\$120) <input type="checkbox"/>	Extension for reply within 2 nd month	(\$450) <input type="checkbox"/>	Extension for reply within 3 rd month	(\$1,020) <input type="checkbox"/>	Extension for reply within 4 th month	(\$1,590) <input type="checkbox"/>	Extension for reply within 5 th month	(\$2,160) <input type="checkbox"/>	Information Disclosure Statement fee	(\$180) <input type="checkbox"/>	37 CFR 1.16(f) Late Oath/Declaration (nonprovisional)	(\$130) <input type="checkbox"/>	37 CFR 1.17 (q) Surcharge - Late provisional filing fee or cover sheet	(\$50) <input type="checkbox"/>	Non-English specification	(\$130) <input type="checkbox"/>	Notice of Appeal	(\$500) <input type="checkbox"/>	Filing a brief in support of an appeal	(\$500) <input checked="" type="checkbox"/>	Request for oral hearing	(\$1,000) <input type="checkbox"/>	Acceptance of unintentionally delayed claim for priority under 35 U.S.C. 119, 120, 121, or 365 (a) or (c)	(\$1,370) <input type="checkbox"/>	Other:	<input type="checkbox"/>
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FEE CALCULATION 2. BASIC FILING FEE - Large Entity <table border="1"> <thead> <tr> <th>Application Type</th> <th>FILING FEE</th> <th>SEARCH FEE</th> <th>EXAMINATION FEE</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr> <td>Nonprovisional</td> <td>(\$300)</td> <td>(\$500)</td> <td>(\$200)</td> <td>(Total = \$1000) <input type="checkbox"/></td> </tr> <tr> <td>Utility</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Design</td> <td>(\$200)</td> <td>(\$100)</td> <td>(\$130)</td> <td>(Total = \$430) <input type="checkbox"/></td> </tr> <tr> <td>Reissue</td> <td>(\$300)</td> <td>(\$500)</td> <td>(\$600)</td> <td>(Total = \$1400) <input type="checkbox"/></td> </tr> <tr> <td>Provisional Utility filing fee</td> <td></td> <td></td> <td></td> <td>(Total = \$200) <input type="checkbox"/></td> </tr> </tbody> </table>	Application Type	FILING FEE	SEARCH FEE	EXAMINATION FEE	Fee Paid	Nonprovisional	(\$300)	(\$500)	(\$200)	(Total = \$1000) <input type="checkbox"/>	Utility					Design	(\$200)	(\$100)	(\$130)	(Total = \$430) <input type="checkbox"/>	Reissue	(\$300)	(\$500)	(\$600)	(Total = \$1400) <input type="checkbox"/>	Provisional Utility filing fee				(Total = \$200) <input type="checkbox"/>	
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3. APPLICATION SIZE FEE: Sheets of Spec and Drawings <input type="checkbox"/> (\$250 for each 50 sheets in excess of 100, except for sequence and program listings) SUBTOTAL (2)+(3) (\$) <input type="checkbox"/>																															
4. EXTRA CLAIM FEES FOR UTILITY AND REISSUE: <table border="1"> <thead> <tr> <th></th> <th>Extra Claims</th> <th>Fee from Below</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr> <td>Total Claims</td> <td><input type="checkbox"/> - 20** = <input type="checkbox"/> x</td> <td><input type="checkbox"/> =</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Independent Claims</td> <td><input type="checkbox"/> - 3** = <input type="checkbox"/> x</td> <td><input type="checkbox"/> =</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Multiple Dependent claims:</td> <td><input type="checkbox"/> =</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table> ** or number previously paid, if greater; For Reissues, see below Fee Description Claims in excess of 20 (\$50 per claim) Independent claims in excess of 3 (\$200 per claim) Multiple dependent claim, if not paid (\$360) **Reissue: each independent claim over 3 and more than in the original patent (\$200 per claim) **Reissue claims: each claim over 20 and more than original patent (\$50 per claim) SUBTOTAL (4) (\$) <input type="checkbox"/>		Extra Claims	Fee from Below	Fee Paid	Total Claims	<input type="checkbox"/> - 20** = <input type="checkbox"/> x	<input type="checkbox"/> =	<input type="checkbox"/>	Independent Claims	<input type="checkbox"/> - 3** = <input type="checkbox"/> x	<input type="checkbox"/> =	<input type="checkbox"/>	Multiple Dependent claims:	<input type="checkbox"/> =	<input type="checkbox"/>	<input type="checkbox"/>	SUBTOTAL (5) (\$) <input type="checkbox"/>														
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SUBMITTED BY		Complete (if applicable)	
Name (Print/Type)	David K. Mattheis	Registration No. (Attorney/Agent)	48,683
Signature		Telephone	(513) 634-9359
		Date	12/11/2006

This collection of information is required by 37 CFR 1.17. The information is required to obtain or retain a benefit by the public which is in file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon individual case. Any comments on the amount of time you are required to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P. O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 09/905,274
Inventor(s) : Clifford Theodore Popsdorf, et al.
Filed : July 13, 2001
Art Unit : 3721
Examiner : Sameh Tawfik
Docket No. : 8690
Confirmation No. : 2737
Customer No. : 27752
Title : A Continuous In-Line Pleating Apparatus and Process

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

This Brief is filed pursuant to the appeal from the decision communicated in the Office Action mailed on July 7, 2006.

A timely Notice of Appeal was filed on October 10, 2006.

REAL PARTY IN INTEREST

The real party in interest is The Procter & Gamble Company of Cincinnati, Ohio.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals, interferences, or judicial proceedings.

STATUS OF CLAIMS

Claims 1-19 and 21-27 are rejected. Claim 20 is withdrawn from consideration.

Claims 1-19 and 21-27 appealed

A complete copy of the appealed claims is set forth in the Claims Appendix attached herein.

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

STATUS OF AMENDMENTS

No amendment was filed.

SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 relates a web pleating apparatus having a mutually orthogonal machine direction, a cross machine direction and a Z-direction. The apparatus comprises a first series of elongate spaced protuberances converging in the cross-machine direction; a second series of elongate spaced protuberances converging in the cross-machine direction; and a drive element disposed to form a friction nip with the first series of elongate spaced protuberances. The first series of protuberances and the second series of protuberances interleave in the Z-direction. The first series and second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web relative to the first and second series of protuberances. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

Claim 14 relates a method for forming a pleatable web. The method includes steps of providing a pleatable web; scoring the pleatable web in the machine direction; and transporting the scored web relative to a first series and second series of cross-machine direction converging elongate spaced protuberances interleaved in the Z-direction. The scored web is transported by contact with a drive element. The drive element forms a friction nip with the first series of converging elongate spaced protuberances. The scored web passes through the friction nip. The scored web is folded by the interleaved first series and second series of converging protuberances. The interleaved converging protuberances pleat the pleatable web in the machine direction. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

Claim 21 relates a web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction. The apparatus comprises: a first series of non-collinear elongate spaced protuberances converging in the cross-machine direction; a second series of non-collinear elongate spaced protuberances converging in the cross-machine direction; and a drive element disposed to form a friction nip with the

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

first series of elongate spaced protuberances. The first series of protuberances and the second series of protuberances interleave in the Z-direction. The first series and the second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web with the first and second series of protuberances. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

Claim 25 relates a web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction. The apparatus comprises: a first series of collectively elongate spaced protuberances converging in the cross-machine direction; a second series of collectively elongate spaced protuberances converging in the cross-machine direction; and a drive element disposed to form a friction nip with the first series of elongate spaced protuberances. The first series of protuberances and the second series of protuberances interleave in the Z-direction. The first series and the second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web within the first and second series of protuberances. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 2-6, 13-18, 21-23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775.495).

2. Claims 7-9, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775.495)

3. Claims 10-12, and 24 are rejected under 35 U 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of in view of McConnell (U.S. Patent No. 775.495) and further in view of Benedict (2,314,757).

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

ARGUMENTS

1. The rejection of claims 1, 2-6, 13-18, 21-23, and 25-27 under 35 U.S.C. 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775,495).

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Third, there must be a reasonable expectation of success of obtaining the claimed invention based upon the references relied upon by the Examiner. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The combination set forth as the basis for the current rejection fails to satisfy each of these criteria. First, the combination of references does not teach or suggest each of the limitations of the invention as claimed. Second, there is no suggestion or motivation to make the combination as set forth by the Examiner. Third, there is no reasonable expectation of success based upon the references in the combination.

As noted by the Examiner, the Tipper reference fails to teach or suggest a drive element disposed to form a friction nip with the first series of elongate spaced protuberances converging in the cross machine direction. TO remedy this deficiency of the Tipper reference, the Examiner posits that the rollers 5 and 8 of the McConnell may be inserted into the mechanism of Tipper to satisfy the claimed requirement. Rollers 5 are neither a friction nip nor driven, nor in contact with a first series of elongate protuberances. Rollers 8 are driven but are not taught as a friction nip, are not in contact with a first series of elongate protuberances and are disposed at a point in the process past the point where the final cross-machine convergence has occurred. Therefore, the Examiner has taken non-friction nip rollers located downstream of the converging portion of the apparatus, which rollers intermesh as a pair and has converted this mechanism into a drive element that forms a friction nip with a fixed elongate protuberance in the converging portion of the apparatus. The Examiner has chosen to ignore the fact that the

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

nature of the interaction of the rollers, intermeshed vs. friction nip, the location of the mechanism in the process, post convergence vs. converging, and the nature of the element interacted with, rotating vs. fixed, are all different from what is claimed. The combination of references taken as a whole to not teach or suggest a drive element forming a friction nip with a first series of elongate protuberances which are converging in the machine direction.

Second, there is no motivation to make the combination suggested by the Examiner. Though both references teach methods of corrugating a web, the combination set forth by the Examiner goes far beyond any combination suggested by the references. The Tipper reference grips the pleated material downstream of the pleating board and pulls the material through the board. McConnell similarly uses intermeshing rollers 8 cited by the Examiner to draw the pleated material through the pleating board. Nothing in either Tipper or McConnell suggests moving the drive element from downstream of the pleating area to a location in the converging portion of the apparatus. This motivation is derived solely from the claims of the application. Considering that the Examiner has chosen to radically reconfigure the nature of the element removed from McConnell and inserted into Tipper it is difficult to determine where in either reference the motivation could possibly arise as neither reference teaches or suggests an inter-convergence friction-nip drive element formed between a combination of fixed and moving elements.

Third, there is no reasonable expectation of success from the references. Apart from the substantial alterations to the nature and location of the mechanism of McConnell, the Examiner has been overly casual in the disposition of this altered mechanism into the apparatus of Tipper. Appellant respectfully requests to know where in the vertically and horizontally converging mechanism of Tipper does the Examiner suggest the drive element forming a friction nip with the protuberances be disposed? Also, the nature of the Tipper mechanism is such that it produces a single pleated casing one at a time. This is accomplished by securing the free end of the casing with a staple and then drawing the pleated casing from the apparatus thus pleating the next casing section. After the pleated casing is drawn out the proximal end of the casing is secured and then the pleated casing is severed from the remainder of the casing material. In what

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

manner does the Examiner posit such a mechanism would benefit from a drive element disposed in the convergence area of the apparatus? Such a drive would complicate the machine as the mechanism. Controlling the pleated casing as it is drawn from the apparatus, securing the free end of the casing material and severing the pleated material into individual portions are all still necessary and none of them are accomplished by the improvement suggested by the Examiner. There is no basis for making this improvement as it will increase the complexity and cost of the mechanism and will also tend to reduce the reliability of the apparatus by increasing the number of apparatus elements which can possibly fail. Taken as a whole the references teach away from making the combination suggested by the Examiner.

The Examiner has combined two references without a proper motivation, or a reasonable expectation of success and the suggested combination also fails to teach or suggest all of the limitations of the inventions as claimed. Appellant respectfully requests that this rejection be overturned.

2. Claims 7-9, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775,495)

Claims 7-9 and 19 depend from claims already demonstrated to be unobvious in view of the cited combination. Beyond that, the Examiner acknowledges that neither Tipper nor McConnell teaches or suggests the limitation that the coefficient of friction of the drive element be greater than the coefficient of friction of the elongate protuberances with which the drive element forms a nip. The Examiner then posits that it would have been an obvious engineering design choice to combine McConnell with Tipper and select the coefficients of friction of the elements of the combination such that they anticipate the claimed invention.

Appellant submits that the disclosure of a pair of rotating drive rollers which do not form a friction nip and which are taught as pulling material through a pleating section from a location downstream of the pleating section and the disclosure of a pair of intermeshed stationary converging elements does not support a combination of a drive element forming a friction nip in the converging portion of a pleating apparatus let alone

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

the idea that the drive element have a coefficient of friction which is greater than the coefficient of friction of the protuberances of the pleating section.

Once again there is not teaching or suggestion of the claimed limitation in the combination, there is no reasonable expectation of success in the combination, and there is no motivation to make the combination. Appellant respectfully requests that this rejection be overturned.

3. Claims 10-12, and 24 are rejected under 35 U 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of in view of McConnell (U.S. Patent No. 775,495) and further in view of Benedict (2,314,757).

The Examiner adds the Benedict reference to overcome the deficiencies of the Tipper - McConnell combination with regard to the element of a scoring device. The addition of the Benedict reference fails to overcome the base deficiency of the underlying combination in that all of the elements of the independent claims from which claims 10-12 and 24 depend remain untaught and undisclosed, the combination of Tipper and McConnell remains unmotivated and without a reasonable expectation of success. Appellant respectfully requests that this rejection be overturned.

SUMMARY

In view of all of the above, it is respectfully submitted that each of the rejection depends upon the combination of Tipper and McConnell. This combination fails each of the three criteria necessary to establish a *prima facie* case of obviousness under 35 §103(a). As a *prima facie* case of obviousness has not been properly established, the rejections under 35 §103(a) should be overturned.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY



Signature

David K. Mattheis

Typed or printed name

Registration No. 48,683

(513) 634-9359

Date: December 11, 2006
Customer No. 27752

Appl. No. 09/905,274
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CLAIMS APPENDIX

1. (Rejected) A web pleating apparatus having a mutually orthogonal machine direction, a cross machine direction and a Z-direction, the apparatus comprising:

a first series of elongate spaced protuberances converging in the cross-machine direction;

a second series of elongate spaced protuberances converging in the cross-machine direction;

a drive element disposed to form a friction nip with the first series of elongate spaced protuberances;

wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web relative to said first and second series of protuberances.

2. (Rejected) The web pleating apparatus of Claim 1 wherein said apparatus has a machine direction inlet to said first and second series of elongate spaced protuberances and said apparatus has a machine direction outlet from said first and second series of elongate spaced protuberances wherein said web maintains contact with said first series and said second series of interleaved protuberances from said inlet to said outlet.

3. (Rejected) The web pleating apparatus of Claim 1 wherein said converging elongate spaced protuberances are blades.

4. (Rejected) The web pleating apparatus of Claim 1 further comprising a converging tunnel disposed downstream in the machine direction of said first and second series of interleaved protuberances to receive said web and wherein said pleated web is constrained by said converging tunnel to maintain said pleated pattern when said web is within said converging tunnel.

Appl. No. 09/905,274
Docket No. 8609
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5. (Rejected) The web pleating apparatus of Claim 4 wherein said converging tunnel comprises an arcuate cavity for receiving said web.
6. (Rejected) The web pleating apparatus of Claim 1 further comprising a drive roll for pushing said pleatable web into said interleaved protuberances.
7. (Rejected) The web pleating apparatus of Claim 6 wherein said first and second spaced protuberances have a first coefficient of friction and said drive roll has a second coefficient of friction and wherein said second coefficient of friction is greater than said first coefficient of friction.
8. (Rejected) The web pleating apparatus of Claim 1 further comprising a heater for heating said pleated web.
9. (Rejected) The web pleating apparatus of Claim 8 further comprising a cooler for cooling said web and being disposed downstream from said heater.
10. (Rejected) The web pleating apparatus of Claim 1 further comprising a scoring device wherein said scoring device is capable of imparting indentations to said pleatable web prior to said pleatable web contacting said first and said second series of converging spaced protuberances and wherein said indentations are aligned with said first and said second series of converging elongate spaced protuberances.
11. (Rejected) The web pleating apparatus of Claim 10 wherein said scoring device comprises first and second axially rotatable rolls having mutually parallel axes, each of said first and second rolls comprising inter-engaging corrugations for imparting said indentations upon said pleatable web.

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
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12. (Rejected) The web pleating apparatus of Claim 11 wherein said first and second rolls are constrained to maintain a fixed gap therebetween, said gap being less than the thickness of a pleatable web interposed between said first and second rolls during operation of said apparatus.

13. (Rejected) The web pleating apparatus of Claim 1 wherein said first series of protuberances and said second series of protuberances are spaced apart in the cross-machine direction.

14. (Rejected) A method for forming a pleatable web comprising the steps of:
 providing a pleatable web;
 scoring said pleatable web in the machine direction;
 transporting said scored web relative to a first series and second series of cross-machine direction converging elongate spaced protuberances interleaved in the Z-direction; wherein the scored web is transported by contact with a drive element, the drive element forming a friction nip with the first series of converging elongate spaced protuberances, the scored web passing through the friction nip, and,
 folding said scored web with said interleaved first series and second series of converging protuberances wherein said interleaved converging protuberances pleat said pleatable web in the machine direction.

15. (Rejected) The method of Claim 14 further comprising the step of: forming said pleated web into an arcuate shape.

16. (Rejected) The method of Claim 15 wherein said step of forming said web into an arcuate shape comprises the steps of:

 providing a forming tunnel having a cross-section converging from a generally linear inlet to an outlet having a generally arcuate shape; and,
 inserting said web into said tunnel.

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

17. (Rejected) The method of Claim 14 wherein said folding plastically deforms said pleatable web.

18. (Rejected) The method of Claim 14 wherein the step of transporting said pleatable web relative to said interleaved first and second series of converging elongate spaced protuberances comprises pushing said pleatable web relative to said interleaved first and second series of converging elongate spaced protuberances.

19. (Rejected) The method of Claim 14 further comprising the step of:
heating said pleated web.

20. (Withdrawn) A filter which comprises:
a pleated web formed by providing a pleatable web, scoring said pleatable web, transporting said scored web relative to a first and second series of interleaved converging elongate spaced protuberances, and, folding said scored web with said interleaved first and second series of converging protuberances wherein said interleaved converging protuberances pleat said pleatable web.

21. (Rejected) A web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction, the apparatus comprising:
a first series of non-collinear elongate spaced protuberances converging in the cross-machine direction;
a second series of non-collinear elongate spaced protuberances converging in the cross-machine direction;
a drive element disposed to form a friction nip with the first series of elongate spaced protuberances;
wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web with said first and second series of protuberances.

22. (Rejected) The web pleating apparatus of Claim 21 further comprising a drive roll for pushing said pleatable web into said interleaved protuberances.

23. (Rejected) The web pleating apparatus of Claim 21 wherein said pleatable web has a first side and a second side opposed thereto, said first series of spaced protuberances contacting said first side and said second series of spaced protuberances contacting said second side when said pleatable web contacts said web pleating apparatus.

24. (Rejected) The web pleating apparatus of Claim 23 further comprising a scoring device, wherein said scoring device is capable of imparting indentations to said pleatable web prior to said pleatable web contacting said first and second series of converging spaced protuberances and wherein said indentations are aligned with said first and second series of converging spaced protuberances.

25. (Rejected) A web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction, the apparatus comprising:

a first series of collectively elongate spaced protuberances converging in the cross-machine direction;

a second series of collectively elongate spaced protuberances converging in the cross-machine direction;

a drive element disposed to form a friction nip with the first series of elongate spaced protuberances;

wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web within said first and second series of protuberances.

26. (Rejected) The web pleating apparatus of Claim 5, wherein said arcuate cavity has a radius, said radius being decreasable in said machine direction.

27. (Rejected) The web pleating apparatus of Claim 22, wherein said arcuate cavity has a substantially uniform radius.

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

EVIDENCE APPENDIX

None

Appl. No. 09/905,274
Docket No. 8609
Appeal Brief dated December 11, 2006
Reply to Office Action mailed on July 7, 2006
Customer No. 27752

RELATED PROCEEDINGS APPENDIX

None